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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PETROLEUM GEO-SERVICES INC.,
Petitioner,

v.

WESTERNGECO LLC,
Patent Owner.

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Case IPR2014-01478
Patent 7,293,520 B2

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Before BRYAN F. MOORE, SCOTT A. DANIELS, and BEVERLY M. BUNTING, *Administrative Patent Judges.*

DANIELS, *Administrative Patent Judge.*

# FINAL WRITTEN DECISION
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

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# I. INTRODUCTION

## *A. Background*

Petroleum Geo-Services ("Petitioner," or "PGS") filed a Petition to institute an *inter partes* review of claims 3, 5, 13–17, 20, 22, and 30–34 of U.S. Patent No. 7,293,520 B2 ("the '520 patent"). Paper 1 ("Pet."). WesternGeco LLC ("Patent Owner") timely filed a Preliminary Response. Paper 12 ("Prelim. Resp."). We instituted trial in *Petroleum Geo-Services, Inc., v. WesternGeco LLC*, Case IPR2014-01478, for claims 3, 5, 13–17, 20, 22, and 30–34 of the '520 patent on certain grounds of unpatentability alleged in the Petition. Paper 18 ("Decision to Institute" or "Dec. on Inst."). Patent Owner, in due course, filed a Response. Paper 40 ("PO Resp."). Petitioner subsequently filed a Reply. Paper 47 ("Pet. Reply").[1]

An oral hearing was held on November 10, 2015. A transcript of the hearing is included in the record. Paper 64 ("Tr.").

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has proven, by a preponderance of the evidence, that claims 3, 5, 13–17, 20, 22, and 30–34 of the '520 patent are unpatentable.

## *B. Additional Proceedings*

Lawsuits involving the '520 patent presently asserted against Petitioner include *WesternGeco LLC v. Petroleum Geo-Services, Inc.*, 4:13-cv-03037 (the "*PGS* lawsuit") in the Southern District of Texas and *WesternGeco LLC v. ION Geophysical Corp.*, 4:09-cv- 01827 (the "*ION*

[1] We refer here to the paper numbers of the redacted versions of Patent Owner's Response and Petitioner's Reply.

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lawsuit") also in the Southern District of Texas, and *WesternGeco LLC v. ION Geophysical Corp.*, 13-1527 (Fed. Cir.). Pet. 2.

The '520 patent was also challenged in *Petroleum Geo-Services Inc., v. WesternGeco LLC* (IPR2014-00689) (PTAB Aug. 5, 2014) (the "first PGS IPR"); and *ION Geophysical Corp. v. WesternGeco LLC*, (IPR2015-00565) (PTAB Jan. 14, 2015).[2]

*C. The '520 Patent*

The '520 patent (Ex. 1001), titled "CONTROL SYSTEM FOR POSITIONING OF A MARINE SEISMIC STREAMERS," generally relates to a system for improving marine seismic survey techniques by more effectively controlling the movement and positioning of marine seismic streamers towed in an array behind a boat. Ex. 1001, col. 1, ll. 24–36. As illustrated in Figure 1 of the '520 patent, reproduced below, labeled "Prior Art," a seismic source, for example, air gun 14, is towed by boat 10 producing acoustic signals, which are reflected off the earth below. *Id*. at col. 1, ll. 3641. The reflected signals are received by hydrophones (no reference number) attached to streamers 12, and the signals "digitized and processed to build up a representation of the subsurface geology." *Id*.

[2] IPR2015-00565 was joined with IPR2014-00689 and a Final Written Decision in that proceeding was mailed by the Board on December 15, 2015.

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Fig.1.
Prior Art

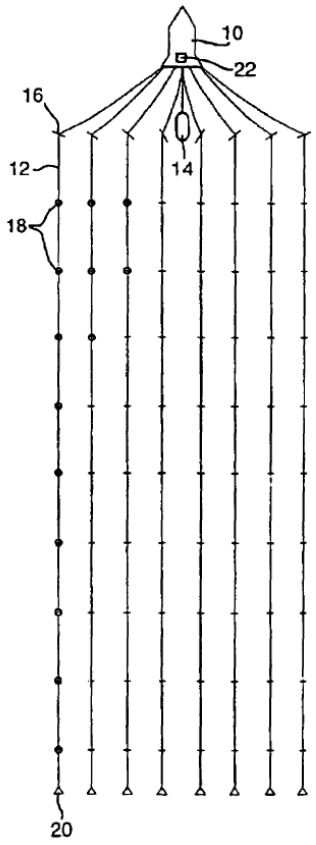


Figure 1, reproduced above, depicts an array of seismic streamers 12 towed behind boat 10. The '520 patent explains that in order to obtain accurate survey data, it is necessary to control the positioning of the streamers, both vertically in the water column, as well as horizontally against ocean currents and forces, which can cause the normally linear streamers to bend and undulate and, in some cases, become entangled with one another. *Id.* at col. 1, l. 42–col. 2, l. 25.

As depicted by Figure 1, each streamer 12 is maintained in a generally linear arrangement behind the boat by deflector 16 which horizontally positions the end of each streamer nearest the vessel. *Id.* at col. 1, ll. 43–45.

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Drag buoy 20 at the end of each streamer farthest from the vessel creates tension along the streamer to maintain the linear arrangement.

Additionally, to control the position and linear shape of the streamer, a plurality of streamer positioning devices, called "birds" 18, are attached along the length of each streamer.3 The birds are horizontally and vertically steerable and control the shape and position of the streamer in both vertical (depth) and horizontal directions. *Id.* at col. 3, ll. 53–61. The bird's function is usually to maintain the streamers in their linear and parallel arrangement, because, when the streamers are horizontally out of position, the efficiency of the seismic data collection is compromised. *Id.* at col. 2, ll. 14–17. The most important task of the birds, however, is to keep the streamers from tangling. *Id.* at col. 4, ll. 4–5.

The invention described in the '520 patent relies on global control system 22 located on, or near the vessel, and local control system 36 on or near each bird, to control the birds on each streamer and maintain the streamers in their particular linear and parallel arrangement. *Id.* at col. 3, ll. 62–66, col. 10, ll. 17–20. The global control system is provided with a model (desired) position representation of each streamer in the towed streamer array, and also receives (actual) position information from each of the birds. *Id.* at col. 4, ll. 21–23. The global control system uses the desired and actual position of the birds to "regularly calculate updated desired vertical and horizontal forces the birds should impart on the seismic streamers 12 to move them from their actual positions to their desired positions." *Id.* at col. 4, ll. 37–40. The local control system implements the information from global control system by "adjusting the wing splay angle to rotate the bird to the proper position." *Id.* at col. 10, ll. 24–25.

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The Specification explains that the control system, as a whole, has two primary modes, a feather angle mode, and a turn control mode. *Id.* at col. 10, ll. 27– 29. The feather angle mode is used to maintain the linear form of the streamer at an angle offset from the direction of towing, usually to account for ocean crosscurrents affecting the streamers. *Id.* at col. 10, ll. 29–37. The '520 patent explains "[o]nly when the crosscurrent velocity is very small will the feather angle be set to zero and the desired streamer positions be in precise alignment with the towing direction." *Id.* at col. 10, ll. 34–36.

The turn control mode is used when the vessel is turning during a survey operation. *Id*. at col. 10, ll. 38–40. In a first part of the turn, birds 18 are instructed to "throw out" the streamer by generating a force in the opposite direction from the turn. *Id*. at col. 10, ll. 40–44. In a second part of the turn, the birds are directed back to the position defined by the feather angle mode. *Id*. The control system determines the first and second part of the turn according to data provided by the vessel navigation system. *Id*. at col. 10, ll. 50–53.

During inclement weather conditions the control system can also operate in streamer separation mode, important for keeping the streamers from tangling. *Id.* at col. 10, ll. 54–57. In this mode, the birds are directed to maintain the streamers a distance apart from one another, where

> [t]he streamers 12 will typically be separated in depth and the outermost streamers will be positioned as far away from each other as possible. The inner streamers will then be regularly spaced between these outermost streamers, i.e. each bird 18 will receive desired horizontal forces 42 or desired horizontalposition information that will direct the bird 18 to the midpoint position between its adjacent streamers.

*Id.* at col. 10, ll. 58–65. These different modes allow the vessel to operate more efficiently, turn faster and lower the incidents of tangling during survey operations leading to a reduction in time and equipment costs of marine surveying. *Id.* at col. 2, ll. 23–25, col. 10, ll. 44–46.

*D. Illustrative Claims*

Claims 3, 5, and 13–17 are dependent, directly or indirectly, upon independent method claim 1, and claims 20, 22, and 30–34 are dependent, either directly or indirectly, upon independent apparatus claim 18. Claims 1 and 18 illustrate the basis of the claimed subject matter upon which the dependent claims rely and are reproduced below:

> 1. A method comprising:
>
> (a) towing an array of streamers each having a plurality of streamer positioning devices there along contributing to steering the streamers;
>
> (b) controlling the streamer positioning devices with a control system configured to operate in one or more control modes selected from a feather angle mode, a turn control mode, and a streamer separation mode.

Ex. 1001, col. 11, ll. 10–18.

> 18. An apparatus comprising:
>
> (a) an array of streamers each having a plurality of streamer positioning devices there along;
>
> (b) a control system configured to use a control mode selected from a feather angle mode, a turn control mode, a streamer separation mode, and two or more of these modes.

Ex. 1001, col. 12, ll. 4–10

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*E. The Alleged Grounds of Unpatentability*

Petitioner contends that the challenged claims are unpatentable on the following specific grounds.[3]

| References | Basis | Claims Challenged |
|---|---|---|
| Workman[4] | § 103 | 3, 5, 20, and 22 |
| Workman | § 102 | 13–14, 30, and 31 |
| Workman | § 103 | 13–14, 30, and 31 |
| Workman and Dolengowski[5] | § 103 | 15–17, and 32–34 |

## II. CLAIM CONSTRUCTION

*A. Legal Standard*

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC.*, 793 F.3d 1268, 1278–82 (Fed. Cir. 2015) ("Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA," and "the standard was properly adopted by PTO regulation."), *cert. granted sub nom. Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 980 (mem.) (2016). Claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent

[3] Petitioner supports its challenge with Declarations of Dr. Brian J. Evans, Ph.D. (Ex. 1002) ("Evans Decl.") and Dr. Jack H. Cole, Ph.D. (Ex. 1003) ("Cole Decl."). *See infra*.
[4] Ex. 1004, U.S. Patent No. 5,790,472 (Aug. 4, 1998).
[5] Ex. 1008, U.S. Patent No. 4,890,568 (Jan. 2, 1990).

disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). If the specification "reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] . . . the inventor's lexicography governs." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (citing *CCS Fitness, Inc. v. Brunswick Corp*., 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). If a feature is not necessary to give meaning to what the inventor means by a claim term, it would be "extraneous" and should not be read into the claim. *Renishaw PLC*, 158 F.3d at 1249; *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988). Only terms which are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

We apply these general rules in construing the claims of the '520 patent.

In our Decision to Institute we determined that an "array of streamers" is "more than one streamer." Dec. on Inst. 11. We determined a "streamer positioning device" is "a device that positions a streamer as it is towed." *Id.* We also determined that "feather angle mode," means "a control mode that attempts to keep each streamer in a straight line offset from the towing direction by a certain feather angle." *Id.* at 13. We interpreted "streamer separation mode" as "a mode to control separation, or spacing, between streamers." *Id.* at 14. In addition, we determined for apparatus claim 18,

that the limitations recited in paragraph b) constituted a Markush group, and therefore "the prior art discloses the limitation if one alternative, i.e. a feather angle, a turn control mode, or a streamer mode, is in the prior art." *Id.* (citing *Fresenius USA, Inc. v. Baxter Int'l, Inc.*, 582 F.3d 1288, 1298 (Fed. Cir. 2009)).

Based on the full record developed during trial, we adopt those constructions not discussed below for purposes of this Decision. Because Patent Owner disagrees with our interpretations of "feather angle mode" and "streamer separation mode" as recited in both independent claims 1 and 18, we provide below additional analysis and the correct claim construction for both these claim limitations. *See* PO Resp. 8–11. Additionally, we construe the term "control modes." *See Id.* 6–8, Pet. Reply 1–2.

*B. Control Modes*

Patent Owner contends that under the broadest reasonable interpretation "control modes is used in the specification to refer to *automated* configurations that attempt to achieve specific goals, i.e., a "goal oriented *automatic* configuration." PO Resp. 7–8 (emphasis added). Petitioner argues that a control mode "is 'simply a particular way of operating a device.'" Pet. Reply, 2 (citing Ex. 1003 ¶¶ 4–17, 32–41, 64).

Patent Owner argues specifically that the '520 patent "confirm[s] the need for a control system with automation," and points to the Specification at column 10, lines 27–53 which we reproduce, in part, below:

> The inventive control system will primarily operate in two different control modes: a feather angle control mode and a turn control mode. In the feather angle control mode, the global control system 22 attempts to keep each streamer in a straight line offset from the towing direction by a certain feather angle. The feather angle could be input either manually, through use of

> a current meter, or through use of an estimated value based on the average horizontal bird forces.

Ex. 1001, 10:27–34. We note that neither the word "automated" nor "automatic" appears anywhere in the cited portion of the Specification. In the context of both the claims and the Specification, the term "control modes" is used only to refer, in the plural sense, to the specifically described "feather angle control mode", turn control mode," and "streamer separation control mode." We are not apprised by Patent Owner of any specific definition of "control modes" indicating that the term is somehow limited to "automated" operation. Indeed, the specification section noted above, clearly indicates that manual, not automated, operation of certain aspects of the feather angle mode is contemplated, "[t]he feather angle could be input either manually, through use of a current meter, or through use of an estimated value based on the average horizontal bird forces." Ex. 1001, 10:32–34. Moreover, dependent claims 3 and 20 both specifically recite the further limitation of "inputting the feather angle manually." It is not clear from any intrinsic evidence provided by Patent Owner that "control modes" as recited in the independent claims is limited to automatic, or automated, operation.

We also determine that the word "automatic" introduces more ambiguity into the claim interpretation because it is not clear from the specification what "automatically" means, or that manual input or operations associated with the systems steering operations are excluded. *See* Ex. 1001, 10:32–33 ("The feather angle could be input [] manually."). We, therefore, decline to adopt Patent Owner's purported construction of this term.

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A common computer term, Microsoft's PC Dictionary defines the word as "mode n. The operational state of a computer or a program." MICROSOFT® PCDICTIONARY 344 (5th Ed. 2002). Under this definition, a "mode" controls the state, i.e., operation, or even lack of operation, of a computer or computer program as is most consistent with the written description and context of the '520 patent. Accordingly, we determine that "control modes" means "operational states."

*C. Feather Angle Mode*

We determined in our Institution Decision that "feather angle mode" is "a control mode that attempts to keep each streamer in a straight line offset from the towing direction by a certain feather angle." Dec. on Inst. 13. Patent Owner's disagreement with our claim construction is based on their insistence that a feather angle must be specifically "set." *See* PO Resp. . This position does not persuade us to change our claim construction because dependent claims 3 and 20 specifically recite "inputting the feather angle manually." To the extent the feather angle is "input[]," as called for with respect to claims 3 and 20, and "set[]" to zero in the case of claims 5 and 22, these dependent claims add limitations arguably commensurate with Patent Owner's arguments, but do not explain why we should specifically incorporate such limitations from the dependent claims into a claim construction of "feather angle mode" as recited in the underlying independent claims 1 and 18.

Reading the claims and the term, "feather angle mode" in light of the specification, we note that our construction parallels the initial description of "feather angle control mode" as described in the '520 patent: "[i]n the feather angle control mode, the global control system 22 attempts to keep

each streamer in a straight line offset from the towing direction by a certain feather angle." Ex. 1001, 10:29–32. What follows, the description of a "manually" input feather angle value, an "estimated value," and the angle being "set to zero" are different embodiments explaining how the feather angle is received and determined by the global control system. Although one embodiment states that the angle is "set" we are not persuaded to read such a term into the claim construction. We must take care when reading a patent specification to interpret and understand the claims and requisite claim language in light of the disclosure, while not inappropriately importing variations and specific embodiments into a claim interpretation. *See Superguide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004) ("Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim.").

Further, Patent Owner argues that the Specification describes the "feather angle control mode" as part of the "inventive control system," essentially contending that these embodiments are somehow limiting. PO Resp. 8–9. The '520 patent describes that "[t]he inventive control system *will primarily operate* in two different control modes: a feather angle control mode and a turn control mode." Ex. 1001, 10:27–29. Read in context, the word "primarily" is not, however, expressly or inherently limiting. We find no description or evidence in the Specification, nor does Patent Owner point us to any language or evidence indicative of any intent, express or inherent, to limit the claimed invention to the disclosed embodiments, preferred, primary, or otherwise. *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) ("Even when the specification describes only a

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single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction.'")

We do agree with Patent Owner's position that the feather angle mode does not encompass "the random alignment of streamers due to weather or ocean conditions." PO Resp. 9. Accordingly, we clarify our claim construction so that it is understood that the feather angle mode includes global control system 22 *using* a certain feather angle value to control the birds and streamers. The "feather angle mode" is properly, "a control mode that attempts to keep each streamer in a straight line offset from the towing direction using a certain feather angle."

*D. Streamer Separation Mode*

Patent Owner argues that our preliminary construction determining that "streamer separation mode" is "a mode to control separation, or spacing between streamers" is incomplete because the construction is "ambiguous as to 'control separation.'" PO Resp. 9–10. Patent Owner argues specifically that "control separation" means that the spacing is "set and maintained." *Id*. at 10.

As we wrote in our original construction, we are not apprised of any evidence in the specification or claims that any specific distance between the streamers in the separation mode is "set and maintain[ed]" as Patent Owner urges. Dec. on Inst. 14. The phrase "set and maintain" may be an explanation of how a system could "control separation" but this phrase is not found anywhere in the specification or claims. Indeed, the '520 patent explains various ways that separation or spacing can be controlled between streamers, [i]n the preferred embodiment of the present invention, the global

control system 22 monitors the actual positions of each of the birds 18 and is programmed with the desired positions of or the desired minimum separations between the seismic streamers 12." Ex. 1001 at 4:21–25 (emphasis added).

Patent Owner argues that the '520 Specification describes "setting and maintaining" the separation between streamers where "it teaches that in the streamer separation mode, the positioning devices are *directed to* a specific position/value, e.g., "to the midpoint position between its adjacent streamers." PO Resp. 10 (citing Ex. 1001, 10:53–65.) (emphasis added) This argument is essentially that one could replace the verb phrase "directed to" with "set and maintained at." The Specification states that:

> each bird 18 will receive desired horizontal forces 42 or desired horizontal position information that will *direct* the bird 18 to the midpoint position between its adjacent streamers.

Ex. 1001, 10:62–65. It may be that an alternative to "direct[ing]" the bird is to "set and maintain" a desired spacing, but we are not persuaded that the Specification requires such a limitation or even states such language contextually or otherwise in describing any embodiments of the invention.

Patent Owner has not provided persuasive evidence adequate to explain why the proper claim construction requires that "control separation" be further defined more precisely as "to set and maintain" the spacing. We determine based on the specification, claim language, and evidence from the complete record before us, that our initial claim construction is correct, and that under the broadest reasonable interpretation, "streamer separation mode," means "a mode to control separation, or spacing, between streamers."

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*E. Maximize Distance Between Adjacent Streamers*

Petitioner asserts that this phrase "requires that the outermost streamers are horizontally separated as far apart as possible and that the inner streamers are *equally* spaced between those streamers." Pet. Reply. 4. Patent Owner argues that the phrase is best understood from the Specification, which describes, "'maximizing the horizontal spacing between the outermost streamers and *regularly* spacing the inner streamers between the outermost streamers.'" PO Resp. 25. The only substantive difference between the parties' proposed constructions is essentially the term "equally" and "regularly." We are not persuaded that this dispute over these words has any substantive relationship to determining anticipation or obviousness in this proceeding. Moreover, the parties' dispute does not explain why the phrase "maximize distance between adjacent streamers" in claims 14 and 31 needs to be interpreted at all. We determine that this claim language is sufficiently clear on its face and in context with "streamer separation mode," and can be reasonably understood according to its plain and ordinary meaning.

## III. ANALYSIS

*A. Claims 13, 14, 30, and 31 – Anticipation by Workman*

To prevail on its patentability challenge, Petitioner must establish facts supporting its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Petitioner asserts that claims 13, 14, 30, and 31 are anticipated by Workman under 35 U.S.C. § 102. Pet. 37–42, Pet. Reply 8–13. Patent Owner disagrees, and focuses its arguments on distinguishing the claimed control modes from Workman, disputing that Workman teaches "a control system configured to operate in control

modes," and specifically contesting Petitioner's assertion that Workman discloses a "streamer separation mode." PO Resp. 18.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. Inc., v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990).

> [U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.

*Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008).

*1. Overview of Workman*

Workman discloses a method for controlling the position and shape of marine seismic streamer cables towed by a vessel. Ex. 1004, Abstract, Fig. 1. More specifically, Workman teaches that real time signals, i.e. actual signals, from a towed streamer array are compared to corresponding input threshold parameters, to determine if the cables should be repositioned. *Id.* at 2:47–51. Workman discloses that the positions of seismic streamer cables are controlled by a plurality of birds and tail buoys "for adjusting the vertical and lateral positions of the streamer cables 13." *Id.* at 3:16–19. Figure 2 of Workman is reproduced below.

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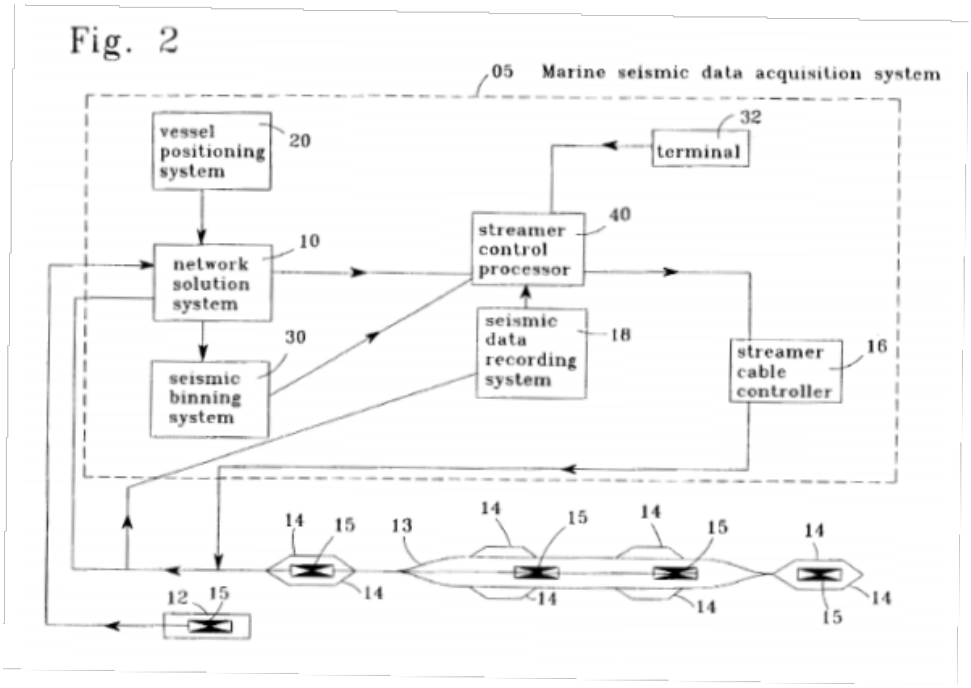


Figure 2 of Workman, above, illustrates diagrammatically, seismic data acquisition system 5 for positioning streamer cables 13 including streamer controller 16 receiving instructions from streamer control processor 40. *Id.* at 4:16–18. Within data acquisition system 5, Workman also discloses network solution system 10 which uses a "Kalman filter solution on the signals it receives from the vessel positioning system 20 and location sensing devices 15." *Id.* at 3:47–49. Workman states that once the real time position signals are obtained, "[t]he streamer control processor 40 evaluates these real time signals and the threshold parameters from the terminal 32 to determine when the streamer cables 13 need to be repositioned and to calculate the position correction required to keep the streamer cables 13 within the threshold parameters." *Id.* at 4:12–17. Threshold values can be, for example, minimum streamer cable separations, minimum allowable seismic coverage, maximum hydrophone noise levels, and minimum

obstructive hazard separation. *Id.* at 3:66–4:3. Besides repositioning of the streamer cables according to the comparison of real time signals and threshold parameters, Workman discusses an "at risk" situation such as entanglement of the streamer cables, or obstructive hazards. *Id.* at 4:45–51. In an "at risk" situation, certain parameters may be disregarded, for example, the hydrophone noise level parameter. *Id.* at 4:41–46. In other situations, the streamer cables may be repositioned due specifically to the level of hydrophone noise. *Id.* at 5:15–19.

*2. Claims 1 and 18*[6]

We address initially claims 1 and 18 as they are the base independent claims from which claims 13–14, and 30–31, respectively depend. Patent Owner argues that Workman does not anticipate claims 1, 13 and 14 or claims 18, 30, and 31 because Workman does not disclose any modes, and specifically does not disclose a "streamer separation mode" as recited in the dependent claims. PO Resp. 18–22.

Patent Owner contends that "Workman only repositions streamers in limited 'at risk' situations when streamers get too close and violate a threshold, but otherwise allows them to float as far away as ocean currents would allow." PO Resp. 19. Patent Owner bases their argument, in part, on their asserted claim construction, contending that Workman's control system "is not *setting* and *maintaining* (or keeping) spacing between adjacent streamers of the streamer array." *Id.*

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[6] Independent claims 1 and 18 recite substantively the same limitations of "control mode" and "streamer separation mode." Although claim 1 is a method claim, and claim 18 is an apparatus claim we understand no substantive difference between these claim terms and our analysis and construction applies equally to both.

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Workman clearly describes a streamer array composed of a plurality of streamers and states explicitly that the intended purpose of the "present invention is an improved system for controlling the position and shape of marine seismic streamer cables." Ex. 1004, 2:45–47. The proper claim construction of "streamer separation mode" is "a mode to control separation, or spacing, between streamers." Thus, recalling our claim construction, above, for "control modes", the question essentially becomes: does Workman disclose a control system with an operational state that controls the separation, or spacing, between streamers? We find that it does.

Workman explains that "threshold parameters are established for determining when the streamer cables should be repositioned," and that such threshold parameters include "minimum allowable separations between streamer cables 13." *Id.* at 3:63–66. Workman explains that if a threshold parameter, such as "minimum allowable separations" is violated, the streamer cable is repositioned with a "position correction required to keep the streamer cables 13 within the threshold parameters." *Id.* at 4:12–17. This description is persuasive of an operational state in Workman that is controlling the separation and spacing between steamers.

Patent Owner argues that "Workman's system is purely reactionary; it lies in wait and attempts to reposition the streamers only in the event that a certain threshold value is violated." *Id.* at 21. This argument asserts, in effect, the operational state occurring under certain conditions, e.g. violation of a spacing threshold, and then the streamer is "repositioned" to control separation or spacing between streamers. We understand Patent Owner's position that Workman's control system is purportedly different from the claimed invention because it may not reposition the streamers unless and

until the threshold is violated. *See* PO Resp. 19. Patent Owner's expert, Dr. Michael Triantafyllou, states that "Workman does not move the streamers *unless* it violates a minimum threshold." Ex. 2075 ¶ 215 (emphasis added). Our claim construction does not, however, require that the streamer cables must be for instance, continuously or actively controlled at all times as this argument suggests. *See* PO Resp. 20–21.

Patent Owner's assertions and evidence from its expert propounding that Workman does not disclose a streamer separation mode rely mainly upon an incorrect claim construction, and therefore, are not persuasive. Petitioner's evidence discussed above, notably Workman itself, persuades us that when the minimum threshold spacing between streamers is violated, Workman's control system applies a correction to the streamers and repositions the streamers, thus "controlling the separation and spacing between the streamers" in accordance with the proper claim construction of "steamer control mode."

*3. Claims 13, 14, 30, and 31*

Patent Owner does not substantively address dependent claims 13, 14, 30 and 31 with respect to the anticipation ground, but relies specifically on its argument with respect to independent claims 1 and 18. PO Resp. 21–22. We point out, as set forth in our Scheduling Order (Paper 19) "that any arguments for patentability not raised in the response will be deemed waived." Sched. Order, 3. We determine therefore, for the reasons set forth above with respect to independent claims 1 and 18, and for the reasons in the Petition and Petitioner's Reply that Workman anticipates claims 13, 14, 30, and 31. *See* Pet. 37–41, Pet. Reply 8–13.

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*B. Claims 13, 14, 30, and 31 – Obviousness over Workman*

Patent Owner has waived their anticipation arguments with respect to claim 13, 14, 30, and 31. It is well settled that novelty under 35 U.S.C. § 102 and nonobviousness under 35 U.S.C. § 103 are separate conditions of patentability. *See Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1363 (Fed. Cir. 2008).

The tests for anticipation and obviousness are different. *Cohesive*, 543 F.3d at 1364. Obviousness generally requires an analysis under the *Graham* factors. *Id*. In the instant case, however, Workman, as a standalone reference discloses all of the limitations of claims 1, 13, 14, 18, 30, and 31 including a "streamer separation mode" as discussed above. In other words, there is no element of claims 1, 13, 14, 18, 30, and 31, that Petitioner can persuasively point to, that is missing from Workman as discussed above in relation to anticipation, that necessitates modification, additional rationale, or articulated reasoning.

Workman is relied upon as the sole reference for both anticipation and obviousness grounds with respect to these claims, and is directed to the same field of endeavor seeking to solve the same, or similar problem of controlling birds, i.e. SPD's, in a towed seismic survey array as in the '520 patent. Accordingly, this case is particularly appropriate for application of the maxim that anticipation is the epitome of obviousness. *Fracalossi*, 681 F.2d at 794.

Moreover, we have considered Patent Owner's arguments with respect to obviousness and are persuaded that Petitioner has provided articulated reasoning with rational underpinning to support the legal conclusion of obviousness. *See KSR*, 550 U.S. at 418 (citing In re Kahn, 441

F.3d 977, 988 (Fed. Cir. 2006)). For example, Petitioner points out with respect to claims 13 and 30, which similarly recite the limitation of "attempting to minimize the risk of entanglement of the streamers," that Workman expressly teaches that it is "desirable for preventing the entanglement of the streamer cables." Ex. 1004 at 1:32–34. Consistent with this evidence from Workman, we credit Petitioner's expert, Dr. Evans, who states that "Workman's embodiment of streamer separation mode for use in 'at risk' situations clearly attempts to keep the streamers separated so as to minimize the risk of entanglement, as required by Claims 13 and 30." Ex. 1002 ¶ 227 (citing Ex. 1004 4:40–43).

For claims 14 and 31 which add the further limitation of "attempting to maximize distance between adjacent streamers," we further credit Dr. Evans testimony on the issue of entanglement and "at risk" situations that:

> [i]t was understood by persons of ordinary skill in the field that during these conditions seismic crews tried to keep streamers separated as much as possible to avoid tangling. Quite simply, in such weather conditions, avoiding streamer entanglement became the overriding goal, and the distances between adjacent streamers were maximized.

*Id.* at ¶ 232. Dr. Evans provides persuasive reasoning based on evidentiary underpinnings from Workman, that one of skill in the art would have known, that in extreme weather situations, the "minimum allowable separation distance," threshold disclosed by Workman "is set to a maximum distance (a maximal separation permitted by the geometry of the relevant components)" and thus will "maximize" the distance between the streamers as called for in claims 14 and 31. *Id.* at ¶ 231.

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Accordingly, we are persuaded on the fully developed record in this proceeding that claims 13, 14, 30, and 31 are obvious in view of Workman.

*C. Claims 15–17 and 32–34 – Obviousness over Workman and Dolengowski*

Petitioner asserts that claims 15–17 and 32–34 are invalid for obviousness over Workman and Dolengowski. A patent is invalid for obviousness:

> if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

35 U.S.C. § 103. Obviousness is a question of law based on underlying factual findings: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the art; and (4) objective indicia of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Courts must consider all four Graham factors prior to reaching a conclusion regarding obviousness. *See Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1076–77 (Fed. Cir. 2012). As the party challenging the patentability of the claims at issue, Petitioner bears the burden of proving obviousness by a preponderance of the evidence. *See* 35 U.S.C. § 316(e).

*1. Overview of Dolengowski*

Dolengowski, like Workman, relates to control and steering of streamers in a towed streamer array for seismic geophysical data collection. Ex. 1008, 1:5–10. Dolengowski teaches a remotely steerable tail buoy for directing the trailing end of a seismic streamer away from obstacles or obstructions which could damage the streamers. *Id.* at 2:66–3:l. 2.

Dolengowski further explains that during turning of the vessel, the streamers are vertically separated, i.e. by depth, one on the surface, another below the surface, in order to prevent entanglement. *Id.* at 2:27–30.

*2. Level of Ordinary Skill*

Petitioner's Declarant, Dr. Evans states that a person of ordinary skill in the art of marine seismic surveying should have for example a Master's degree or Ph.D. in ocean engineering, mechanical engineering, geophysics, or a related area, an understanding of hydrodynamics and advanced control systems, and at least three years of experience designing and operating marine seismic surveys, including significant field experience aboard marine vessels undertaking marine seismic surveys. Ex. 1002 ¶ 22. According to Dr. Triantafyllou, Patent Owner's expert, one of ordinary skill in the art would have a "Bachelor of Science in ocean engineering or control systems; or five years of experience in the field of ocean engineering or marine seismic surveys." Ex. 2075 ¶ 18.

There is no specific dispute regarding the level of ordinary skill in the art between the parties although Petitioner's definition essentially involves greater educational component and specific field experience on a survey vessel. Notwithstanding the evidence on skill level presented by the parties, the level of skill in the art often can be determined from a review of the prior art. *See Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163–64 (Fed. Cir. 1985). Based on our review of the prior art and the parties definitions, the applicable field of endeavor is marine seismic surveying, and the person of ordinary skill in the art would have at least a bachelor's degree in ocean, mechanical, geophysical or electrical engineering, or a similar science degree, and a minimum of 3 years of marine seismic survey design

and field experience. Ex. 2075 ¶ 18, Ex. 1002 ¶ 22. The person of ordinary skill in the art would also be familiar with the design and operation of marine seismic surveys and the design of seismic survey arrays including sensors such as hydrophones, streamers, streamer positioning devices and the associated electronic equipment for producing representations of sub-surface geology. *See generally* Exs. 1001, 1:16–2:45, Fig. 1; 1013, 1–2, 1006; 1058; 1059.

*3. Claims 15 and 32*

Claim 15 is dependent upon claim 13 and, like claim 32, recites the further limitation of "separating the streamers in depth." Ex. 1001 11:60–61.

Patent Owner concedes that Dolengowski teaches separating the streamers in depth to prevent tangling of the streamers. PO Resp. 20. Patent Owner argues that one of skill in the art would not have combined Dolengowski with Workman, because the way in which Dolengowski separates the streamers in depth "is entirely different from both the '520 patent's teaching, as well as the methods described in Workman, that use positioning devices located along the length of the streamer to manipulate the streamers' position." PO Reply 28 (citing Ex. 2075 ¶ 241).

We are not persuaded by Patent Owner's argument that Dolengowski's tail buoy that controls the depth, or vertical, streamer separation is so entirely different from Workman that one of skill in the art would not have been motivated to combine these references. These prior art references are drawn specifically to the same field of seismic ocean geophysical data collection and seismic streamer control as the '520 patent. Birds and steerable tail bouys were known streamer positioning devices in

the field for controlling seismic streamers.[7] Moreover, it is not necessary for the prior art to serve the same purpose or disclose the exact method or structure as that in the '520 patent in order to support the conclusion that the claimed subject matter would have been obvious. *See In re Linter*, 458 F.2d 1013, 1016 (CCPA 1972). "A reference may be read for all that it teaches, including uses beyond its primary purpose." *In re Mouttet*, 686 F.3d 1322, 1331 (Fed. Cir. 2012), citing *KSR*, 550 U.S. at 418–421.

Petitioner argues that due to "Dolengowski's focus on streamer tangling, a POSA would have been motivated to combine it with Workman, which addressed the same problem." Pet. 44. Petitioner reasons that where Workman teaches separation of streamers laterally to prevent streamer tangling, Dolengowski's teaching to separate streamers vertically would further the goal of preventing streamer entanglement. *Id.* Petitioner further contends that because Workman's birds are capable of being controlled in depth by diving planes, that a person of ordinary skill in the art would have a reasonable expectation of success in achieving such a combination. *Id.* at 44–45 (citing Ex. 1004 at 1:58–61). In addition, Dr. Evans testifies persuasively that streamer entanglement was a known problem in the industry to persons of ordinary skill in the art who, in addition to lateral separation, would have looked to Dolengowski "to prevent entanglement of

[7] The '520 patent explains that "[w]hile the embodiment of the inventive control system described above is shown in connection with a 'bird' type of streamer positioning device, it will be readily understood that the control system method and apparatus may also be used in connection with streamer positioning devices that are characterized as 'deflectors' or steerable 'tail buoys' because they are attached to either the front end or the back end of the streamer 12." Ex. 1001, 11:1–6.

the streamers by diving one streamer while surfacing the other with the aid of . . . remotely controllable birds." Ex. 1002 ¶ 95 (citing Ex. 1008, 2:26–30).

We have considered Patent Owner's arguments with respect to obviousness and are persuaded that Petitioner has the stronger position here, and also has provided articulated reasoning with rational underpinning to support the combination of Workman and Dolengowski and the legal conclusion of obviousness for claims 15 and 32. *See KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

*4. Claims 16, 17, 33, and 34*

Claims 16 and 33 depend from claims 15 and 32, respectively, and recite the further limitation "wherein the array of streamers comprises two streamers, and comprising positioning the two streamers as far away from each other as possible." Ex. 1001, 11:62–64.

Patent Owner argues that Workman and Dolengowski would not have been combined by one of skill in the art because Workman discourages device movement that leads to increased noise in the data collection. PO Resp. 29. Petitioner responds persuasively that noise and data collection are generally relevant only when the streamers are at a constant depth, and that "[w]hen conditions require streamers to be separated in depth, [] seismic data acquisition stops, making any noise generated by depth-separation irrelevant." Pet. Reply 15 (citing Ex. 1002 ¶ 239).

We see little difference, substantively, between claim 16 and claim 13 with respect to maximizing distance between streamers apart from slightly different or alternative nomenclature. Also, Patent Owner's argument appears as a teaching away argument and is not persuasive because

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Appellant has not pointed to anything in Workman that criticizes, discredits, or discourages investigation into depth separation of seismic streamers when the arrays are being towed in the types of conditions which require such streamer separation. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (A reference does not teach away by merely disclosing an alternative invention without criticizing, discrediting, or otherwise discouraging investigation into the claimed invention.). We are persuaded by the reasons and evidence set forth in the Petition that claims 16 and 33 are obvious over Workman and Dolengowski.

Patent Owner does not substantively argue claims 17 and 34 which depend from claims 16 and 33, but relies on its arguments with respect to claims 16 and 33. *See* PO Resp. 30. Accordingly, having considered Patent Owner's arguments with respect to obviousness for claims 16, 17, 33, and 34 we are persuaded that Petitioner has provided articulated reasoning with rational underpinning to support the combination of Workman and Dolengowski and the legal conclusion of obviousness for these claims.

*D. Claims 3, 5, 20, and 22 – Obviousness over Workman*

*1. Claims 2 and 19*

We point out initially that claims 2 and 19 are the claims from which claims 3, 5 and 20, 22 depend respectively. It is worth noting that claims 2 and 19 recite that the "control mode is the *feather angle mode*." Ex. 1001, 11:19–20, 12:11–12 (emphasis added).

We address initially the underlying limitation of a "feather angle mode," as recited in claims 2 and 19 because Patent Owner argues that "Petitioner has not set forth a rational underpinning—**separate from the teachings of the '520 patent—**for why one of ordinary skill in the art would

have modified Workman to use a feather angle mode to position streamers." PO Resp. 31.

As discussed above in our claim construction, "feather angle mode" is, "a control mode that attempts to keep each streamer in a straight line offset from the towing direction using a certain feather angle." We identified the scope of Workman above, which does not explicitly describe a feather angle, and Petitioner essentially concedes that Workman does not expressly disclose a feather angle or using a feather angle value to control the streamer array. Pet. Reply 16. Despite this, Petitioner alleges that based on "Workman, the scientific literature, and the experience of practitioners in the field provided several reasons for a POSA to implement a feather angle control mode." Pet. 29. Patent Owner disagrees, and contends that Dr. Evans makes unsupported suppositions as to the prior art teachings, draws erroneous conclusions of fact and neither Dr. Evans, nor Dr. Cole explain sufficiently how Workman would have been modified to use a feather angle in a streamer array control system. PO Resp. 31–32.

Petitioner first identifies several reasons why one of skill in the art would want to control and maintain consistent separations between streamers during seismic surveys; first, "[a] straight and parallel streamer configuration, in-line with the towing direction, was known to be the ideal configuration of a seismic streamer array, as depicted in Figure 1 of both Workman and the '520 Patent (labeled as "Prior Art")." Pet. 23–24 (citing Ex. 1002 ¶ 166–67; Ex. 1004, Fig. 1; Ex. 1001, Fig. 1). Second, Petitioner argues specifically that Workman discloses this consistent control of the streamer separation straight behind the boat, i.e. at a zero degree feather angle, that is the same as the zero degree feather angle embodiment

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described in the '520 patent. *Id.* at 24–25; *see also* Ex. 1002 ¶ 166–172. Third, Petitioner relies upon the testimony of Dr. Evans who explains that a person of skill in the art would have known, for example, where a current was naturally offsetting the streamers at a five degree feather angle, that

> [i]n this situation, attempting to return the streamers to a zero degree feather angle against the current may generate hydrophone noise that adversely affects data quality. In such situations, a person of ordinary skill would understand that it may be more desirable to maintain the streamers at a constant two degree feather angle than to return the streamers to the zero degree feather angle position.

Ex. 1002 ¶ 183. Also, Dr. Evans states that one of skill in the art would need to match feather angles in subsequent surveys of the same geographic area to obtain reliable 4D survey data, for example "[i]n order to accomplish this goal, "repeatability of seismic data is a key issue," meaning that effective 4D surveying required matching streamer positions from a previous 3D survey." *Id.* at ¶ 185 (citing Ex. 1012 (David H. Johnston et. al., "TIME-LAPSE SEISMIC ANALYSIS OF THE NORTH SEA FULMER FIELD," SEG Extended Abstracts (1997)) ("Johnston") at 890. In addition, Dr. Evans testifies that because Workman could laterally control multiple streamers "[m]odifying that system to maintain a non-zero degree offset would have been straightforward and within the capabilities of a person of ordinary skill." *Id.* at ¶ 187.

We are not persuaded by Patent Owner's position that Workman itself does not provide a teaching or reason to use a feather angle input to facilitate control of the streamers. *See* PO Resp. 32. Petitioner relies on its expert, Dr. Evans, and the level of ordinary skill in the art to supply the necessary

reasoning and rationale for its obviousness analysis with respect to use of a feather angle to control the streamers. There is no legal requirement that the asserted reasoning or rationale be predicated on a teaching or suggestion in the reference. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007) ("The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents.").

The question of obviousness in this proceeding for a "feather angle mode" rests on whether Dr. Evans has provided a persuasive articulated reasoning based on rational underpinnings to support the contention that one of ordinary skill in the art having familiarity with the design and operation of marine seismic surveys, seismic survey arrays including sensors such as hydrophones, streamers, streamer positioning devices and the associated electronic equipment, and would have modified Workman to use a feather angle to control streamer positioning. Without this, Petitioner's analysis and arguments would therefore appear to be the result of hindsight analysis as Patent Owner asserts. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), (cited with approval in *KSR*, 550 U.S. at 418.)

Dr. Evans testifies persuasively that during collection of seismic data it was important to attempt to achieve a fairly consistent and straight streamer array, even at a feather angle, behind the boat towing the array and along the plotted survey route, or line:

> It was well-known to persons of ordinary skill that maintaining a straight and constant feather angle—even if nonzero—would produce better quality seismic data than data retrieved from a

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> cable that was not set and maintained in a straight configuration, while also reducing the chance of tangling."

Ex. 1002 ¶ 183. Dr. Evans also testifies persuasively that streamer feathering was a known factor in seismic surveys where currents forced the streamers out of alignment behind the boat and "attempting to return the streamers to a zero degree feather angle against the current using streamer steering may generate hydrophone noise that adversely affects data quality due to the noise." *Id.* Based on this, Dr. Evans states that in order to optimize data collection, "a person of ordinary skill would have understood that it may be more desirable to maintain the streamers at a constant feather angle between zero degrees and five degrees than to use steering to return the streamers fully to the zero degree feather angle position." *Id.*

What is not immediately clear from Petitioner's argument is why prescribing a specific offset "feather angle" value to the streamers positioning determination system would have been apparent to one of skill in the art. But to this point, Dr. Evans directs us to Workman for evidence that it was a "well-known problem that the noise produced by streamer positioning devices can reduce seismic data quality in certain situations." *Id.* at ¶ 177 (citing Ex. 1004, 1:62–2:9). Based on these evidentiary underpinnings, Dr. Evans reasons that

> a person of ordinary skill would have understood that it may be more desirable to maintain the streamers at a constant feather angle between zero degrees and five degrees than to use steering to return the streamers fully to the zero degree feather angle position (thereby potentially creating excessive noise) or not steering the streamers at all (thereby introducing significant position deviation from the desired survey plan with attendant data quality degradation). It was well-known to persons of ordinary skill that maintaining a straight and constant feather

> angle—even if nonzero—would produce better quality seismic data than data retrieved from a cable that was not set and maintained in a straight configuration, while also reducing the chance of tangling.

*Id.* at ¶ 183. This reasoning is persuasive because it explains why one of ordinary skill in the art would have been motivated to use a specific feather angle value to determine streamer positioning apart from that imparted by a crosscurrent (five degrees) and different also from the streamers being repositioned to an alignment straight behind the boat towing the array i.e. at zero degrees. In Petitioner's example, by moving the streamers from five degrees, to a two degree feather angle, one of ordinary skill in the art understood that the data collection quality would be better and the noise generated by the SPD's would not be as great as if the streamers were returned to the zero degree offset straight behind the boat and aligned with the plotted survey line.

We are also persuaded that Petitioner has provided sufficient explanation and evidence that one of ordinary skill in the art would have been able to implement such a feather angle mode with a reasonable expectation of success. Petitioner relies on the declaration of Dr. Cole, who states that from the collected positional data, Workman's

> control system uses the collected data to output the 'real time streamer cable shapes,' Ex. 1004 at 3:49-50, as noted above, and knowledge of these shapes would facilitate simple calculation of the feather angle offset of the streamer cables using basic geometry. Thus, Workman's control system could be readily adapted to measure the feather angle offsets of its streamers, just as it is able to calculate streamer cable separations.

Ex. 1003 ¶ 96. Dr. Cole further states persuasively that

> just as Workman could use its measurements of streamer cable separations to enforce a 'minimum allowable separations between streamer cables' threshold parameter, [] it could use its feather angle measurements to continually enforce and regulate streamer steering via a parameter that sought to keep streamers oriented in a straight and parallel configuration at a chosen feather angle.

*Id.* Accordingly, we give some weight to Dr. Cole's testimony, along with Dr. Evans' testimony in this regard, and are persuaded that one of ordinary skill in the art, at the time of the filing of the '520 patent would have been motivated to determine, from streamer positional data disclosed in Workman, a streamer cable angle offset from 0, i.e. a feather angle, and could have successfully implemented corrective streamer positioning, should it be necessary, to control the streamers based on such a feather angle.

The remainder of Patent Owner's arguments for lack of obviousness with respect to "feather angle mode," rely upon improper interpretation of the term "control mode." PO Resp. 32–33. Patent Owner reiterates their argument that "[t]his is ***not*** a control mode that attempts to 'keep' or 'set[s] and maintain[s] each streamer in a straight line offset from the towing direction ***by a certain feather angle***.'" *Id.* at 33. As discussed above in our claim construction, we construe "control modes" as "operational states." We appreciate also, as Petitioner argues, that Dr. Triantafyllou is an expert in the field. *See* PO Resp. 34 (citing Ex. 2075 ¶¶ 216–220, 225). However, Dr. Triantafyllou's testimony refuting Dr. Evans's testimony is based on an erroneous claim construction that includes the requirements that the claims at issue require "active steering" and "continually steer[ing]" the streamers. *See* Ex. 2075 ¶ 221 (Dr. Triantafyllou states, for example, that nothing Dr. Evans or Petitioner can point to "would have prompted a POSA to modify

Workman's noise-reduction system to continually steer streamer positioning devices to maintain a specified streamer separation or feather angle."). We are not persuaded by these contentions that Dr. Evan's testimony should be disregarded.

Patent Owner does not substantively argue claims 3, 5, 20, and 22 but instead relies on its arguments with respect to the non-obviousness of "feather angle mode," as discussed above with respect to the underlying claims, including independent claims 1 and 18 and intervening dependent claims 2 and 19. *See* PO Resp. 38. We have considered Patent Owner's arguments with respect to obviousness for claims 3, 5, 20, and 22 and are persuaded that Petitioner has provided articulated reasoning with rational underpinning to support the legal conclusion of obviousness in view of Workman for these claims.

We turn now to Patent Owner's evidence and arguments relating to secondary considerations of non-obviousness.

*E. Secondary Considerations of Non-Obviousness*

Evidence showing objective indicia of nonobviousness constitutes "independent evidence of nonobviousness." *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1378 (Fed. Cir. 2012) (quoting *Pressure Prods. Med. Supplies, Inc. v. Greatbatch Ltd.*, 599 F.3d 1308, 1319 (Fed. Cir. 2010)). Evidence of secondary considerations of non-obviousness, when present, must always be considered en route to a determination of obviousness. *Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d at 1075–76 *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538–39 (Fed. Cir. 1983). Whether before the Board or a court, consideration of objective indicia is part of the whole obviousness analysis,

not just an afterthought. *See Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1358 (Fed. Cir. 2013).

Patent Owner has proffered certain evidence of secondary considerations. PO Resp. 40–46. The factual inquiries for obviousness include secondary considerations based on evaluation and crediting of objective evidence. *Graham*, 383 U.S. at 17. However, to accord substantial weight to objective evidence requires the finding of a nexus between the evidence and the merits of the claimed invention. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995); *see also In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996) ("[S]uccess is relevant in the obviousness context only if there is proof that the sales were a direct result of the unique characteristics of the claimed invention."). "Nexus" is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). The burden of showing that there is a nexus lies with the patent owner. *Id.*; *see In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

Patent Owner contends that certain evidence from the *ION* lawsuit and from the Declaration of Robin Walker, (Ex. 2099), Patent Owner's former Vice President of Sales and Marketing Director, establishes a long-felt need and commercial success of the patented inventions. PO Resp. 42 (citing Ex. 2099 ¶¶ 10–36; Ex. 2101, 3; Ex. 2108, 20). Specifically, Patent Owner argues that "the record evidence from the ION litigation . . . establishes the long-felt need for and commercial success of the patented inventions, as well

as initial industry skepticism followed by praise once the inventions were commercialized." *Id.*

*1. Commercial Success and Long-Felt Need*

Patent Owner argues that Q-Marine, the WesternGeco Product that purportedly embodies the inventions recited in the claims of the '520 patent, was commercially successful because it "met the long-felt, previously unsatisfied need for closer streamer spacing without the risk of tangling, elimination or reduction of costly infill, faster turn times, and better, more frequent 4D surveys through its use of array-level lateral steering enabled by the patented inventions." PO Resp. 42 (citing Ex. 2099 ¶¶ 10–36; Ex. 2101, 3; Ex. 2108, 20). Patent Owner's evidence includes the Declaration testimony of Mr. Robin Walker, who testifies that:

> In August 2000, WesternGeco launched the Q-Marine system, its commercial embodiment of the Bittleston patents and the first lateral steering system on the market. Through its provision of WesternGeco's patented lateral steering technology, Q-Marine satisfied a significant, previously unmet need in the industry for better quality data and more cost-effective surveys by offering numerous benefits.

Ex. 2099 ¶ 12. We understand from Mr. Walker's testimony that the Q-Marine's benefits result in "better quality data and more cost-effective surveys," and that these benefits derive from "WesternGeco's patented lateral steering technology," as stated by Mr. Walker. *Id.* This evidence tends to show that the industry was interested in products that could achieve improved or better data acquisition, and perhaps understood that lateral steering of the birds and streamers helped achieve improved data. However this evidence is not sufficiently linked to the claims at issue. Claim 3, for example, recites specifically "inputting the feather angle manually." Mr.

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Walker's testimony, above, with respect to lateral steering being the patented aspect of Q-Marine which drove sales, is not persuasive as it pertains to claim 3 and the "feather angle mode." Neither the claims, nor our construction of "feather angle mode" is limited by the inclusion of "lateral steering." Indeed, to the extent lateral control is asserted as a novel aspect of the claimed invention with respect to any claims in the '520 patent, such evidence is contradicted by Dr. Simon R. Bittleston, one of the named inventors of the '520 patent, who testified in the underlying *ION* lawsuit that he did not invent laterally steered, towed devices, but a "global control system":

> Q: So any statement that you invented lateral steering is just wrong?
>
> A: Yes. I am not the inventor of laterally steering. I'm an inventor of a global control system.

Ex. 2083, 91.[8] We are not persuaded by Patent Owner's arguments or evidence that the laterally steerable Q-Marine product satisfied a long-felt, or unmet need leading to commercial success because lateral steering was apparently already known in the industry, and also because neither claim 3, nor claim 2, or independent claim 1 from which claims 2 and 3 depend, contains any limitation or recitation with respect to lateral steering. Consequently, we accord very little weight to Mr. Walker's testimony and the other evidence pertaining to the alleged benefits of lateral steering with respect to supplying the required nexus for long-felt need and commercial success.

[8] We cite the page numbers provided by Patent Owner here, not the original page numbers.

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It may be that the Q-Marine product can be laterally steered and provides a better, faster, more reliable and even commercially successful 4D survey, but the contested claim does not contain any such limitation and any commercial success enjoyed by the Q-Marine product is relevant *only* if the challenged claim is shown to embody those products. Patent Owner's evidence that Q-Marine was successful due to lateral steering has not made out that critical showing. *See In re DBC*, 545 F.3d 1373, 1384 (Fed. Cir. 2008) (finding no nexus, absent evidence that "the driving force behind [the allegedly successful product's sales] . . . was the claimed combination"); *Ormco Corp. v. Align Techn. Inc.*, 463 F.3d 1299, 1311–12 (Fed. Cir. 2006) (requiring a "nexus between the claimed invention and the commercial success"); *Huang*, 100 F.3d at 140 (requiring proof that sales were a "direct result of the unique characteristics of the claimed invention").

To the extent that Patent Owner is relying on commercial success apart from long-felt need by alleging "billions of dollars in revenue," (PO Resp. 43 (citing Ex. 2009 ¶ 51)), a patentee demonstrates commercial success by showing significant sales of the patented product in a relevant market. *J.T. Eaton & Co., Inc. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563 (Fed. Cir. 1997). Mr. Walker testifies mainly that such sales and "commercial success is due to WesternGeco's patented lateral steering technology, specifically the predictive and global control and ability to target and implement modes to control separations, feather and turns." Ex. 2099 ¶ 52. Patent Owner does not explain why billions of dollars of Patent Owner's sales alone, without accompanying market share data, constitutes commercial success. It is well established that absolute sale numbers without market share data does not establish commercial success. *See, e.g.*,

*Huang*, 100 F.3d at 140. Neither Mr. Walker, nor Patent Owner's Response discusses or presents market share information.

We give very little weight with respect to nexus based on Mr. Walker's testimony. None of the claims at issue include such a lateral steering limitation, nor does our construction of "feather angle mode" include any such lateral steering component, and Patent Owner has not proven that the sales were a direct result of the unique characteristics of the invention, and not a result of economic and commercial factors unrelated to the quality of the patented subject matter. *In re Applied Materials, Inc.*, 692 F.3d 1289, 1299–1300 (Fed. Cir. 2012). Consequently, Patent Owner has not produced sufficient evidence, including persuasive fact, data or analysis, that links the asserted commercial success of the Q-Marine product to the claim at issue.

*2. Industry Praise*

Patent Owner lists numerous documents purportedly evidencing significant industry praise for the claimed invention. PO Resp. 43–44 (citing Exs. 2111, 2; 2129, 1; 2130, 2; 2122; 2135, 1–2; 2113, 26; 2114; 2115, 2; 2109, 1; 2110, 7; 2116, 1–2; 2112, 3; 2120, 10; 2125, 4113:23–4114:24). We find this evidence as a whole also relates to the feature of lateral steering of the Q-Marine product. For example, Patent Owner refers to trial testimony in the *ION* lawsuit from Kenneth Williamson, a senior vice president of GeoVentures Group, a business unit of ION, who was formerly an employee of WesternGeco:

> Q. Some oil companies, while you were at WesternGeco, would have attributed the highest value to Q-Marine's lateral steering capabilities, correct?

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> A. Yes. . . .
>
> Q. And you recall that Statoil selected WesternGeco for that survey because of Q-marine's lateral steering capabilities?
>
> A. In that case, yes.

Ex. 2125, 4113:23–4114:24. The evidence presented by Patent Owner of industry praise relating to the lateral steering capabilities of the Q-Marine product is for an unclaimed feature not present in the claims at issue here and does not persuade us that Patent Owner has supplied the required evidence of nexus tying industry praise for the Q-Marine product to the invention.

Having considered it, Patent Owner's evidence of long-felt need, commercial success, and industry praise does not outweigh the strong showing of obviousness made out by Petitioner. *See Sud-Chemie, Inc. v. Multisorb Techs., Inc.*, 554 F.3d 1001, 1009 (Fed. Cir. 2009) ("evidence of unexpected results and other secondary considerations will not necessarily overcome a strong prima facie showing of obviousness"). Patent Owner has not established a sufficient nexus between the claimed features of the '520 patent at issue here and the alleged commercial success of the Q-Marine product. Accordingly, the alleged commercial success of the Q-Marine product does not support a conclusion of nonobviousness of the challenged claims in this case.

*F. Time Bar under 35 U.S.C. § 315(b)*

Patent Owner makes several arguments in support of its position that the PGS IPR is time-barred under 35 U.S.C. § 315(b) because PGS is a privy of ION Geophysical Corporation ("ION") and because ION is an unnamed

real party in interest ("RPI"). PO Resp. 46–57. We address each of Patent Owner's arguments below.

*1. Privity Under 35 U.S.C. § 315(b)*

Under 35 U.S.C. § 315(b), institution of an *inter partes* review is barred "if the petition requesting the proceeding is filed more than 1 year after the date *on which the petitioner, real party in interest, or privy of the petitioner is served with a complaint alleging infringement of the patent*" (emphasis added). We note that "[t]he notion of 'privity' is more expansive, encompassing parties that do not necessarily need to be identified in the petition as a 'real party-in-interest.'" The Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,759 (Aug. 14, 2012) ("Practice Guide"). "Privity is essentially a shorthand statement that collateral estoppel is to be applied in a given case . . . . The concept refers to a relationship between the party to be estopped and the unsuccessful party in the prior litigation which is sufficiently close so as to justify application of the doctrine of collateral estoppel." *Id.* (quoting 154 Cong. Rec. S9987 (daily ed. Sept. 27, 2008) (statement of Sen. Kyl)).

Patent Owner contends that Petitioner and ION are privies and thus Petitioner is time-barred because ION was served with a complaint alleging infringement of the '520 patent more than four years before the petition was filed. PO Resp. 50. Patent Owner contends specifically that PGS is a privy of ION because PGS asked ION to develop, and now purchases, the allegedly infringing DigiFin product from ION under a contractual agreement. *Id*. Patent Owner asserts that Petitioner and ION are privies because PGS and ION have a cooperative relationship in the underlying *ION* lawsuit and this IPR due to an indemnification agreement. *Id*. at 56. Patent

Owner further alleges that PGS appeared in the *ION* lawsuit, and this in addition to the assertion of a common interest privilege with respect to their communications in the *ION* lawsuit, establishes privy. *Id.* at 52–53.

It is undisputed that service was effected on ION as a defendant in the *ION* lawsuit on June 12, 2009, alleging infringement of the '520 patent more than one year before the petition was filed. Patent Owner also filed a similar complaint against a company called Fugro, a customer of ION, which was consolidated with the ION lawsuit. On December 8, 2009, remarking that Petitioner may have been involved in the design and testing of the ION products, Patent Owner provided Petitioner via email with a copy of the complaint against ION. *Id*. at 51 (citing Ex. 2008). Subsequently in the *ION* lawsuit, Patent Owner subpoenaed Petitioner on January 22, 2010 to produce documents and evidence relating *inter alia* to Petitioner's use and operation of ION's DigiFIN product. *Id*. (citing Ex. 2009). Patent Owner argues that "once entering an appearance, PGS was actively involved with the case," and "consistently communicated with ION's in-house counsel." *Id*. at 52 (citing Exs. 2015, 2016).

We are not persuaded that communications between PGS and ION in the *ION* litigation, based on a subpoena filed by Patent Owner, is persuasive of privity. The email communications relied upon by Patent Owner, Exhibits 2015 and 2016, indicate (1) that ION desired to depose certain PGS employees (Ex. 2015), and (2) that ION suggested to PGS counsel (Ex. 2016) that certain public trial testimony and expert reports from the *ION* lawsuit might be helpful for PGS to understand WesternGeco's and ION's positions in the lawsuit. The employee deposition communication is simply an arms-length, although cordial, negotiation between different companies,

to make certain employees available for deposition. *See* Ex. 2015. In fact, ION's counsel concedes that there were procedural difficulties between ION and PGS in deposing PGS employees. *See id*. Furthermore, apart from citing to this email, Patent Owner provides no explanation as to why this communication is indicative of duplicitous collusion on the part of either PGS or ION that would be any basis or evidence of privity. *See* PO Resp. 53–54. Patent Owner similarly provides no explanation as to why a fairly simple email exchange between ION and PGS counsel regarding the start time of an expert's public trial testimony is a basis for privity. *See id*.

Patent Owner also believes its allegations of privity are supported by a "common interest privilege" asserted by PGS and ION. PO Resp. 52 (citing Ex. 2028). The nature of shared interests in invalidating the '520 patent, undertaking a joint defense and assertion of a common interest privilege does not, without more, indicate privity between Petitioner and ION. *See* Practice Guide, 77 Fed. Reg. at 48,760:

> [I]f Party A is part of a Joint Defense Group with Party B in a patent infringement suit, and Party B files a PGR petition, Party A is not a 'real party-in-interest' or a 'privy' for the purposes of the PGR petition based solely on its participation in that Group.

Collaboration, by itself, is not evidence that ION has any involvement either by way of control or funding the filing of this Petition.

There is nothing surreptitious about separate entities, as either third parties, or separate parties to a legal action, proclaiming shared interests to protect communications that are relevant to advance the interests of the entities possessing the common interest. *See In re Regents of Univ. of California*, 101 F.3d 1386, 1389 (Fed. Cir. 1996) ("The protection of communications among clients and attorneys 'allied in a common legal

cause' has long been recognized.") (quoting *In re Grand Jury Subpoena Duces Tecum*, 406 F.Supp. 381, 386 (S.D.N.Y. 1975)). The simple fact that Petitioner and ION, have a desire, and common interest, in invalidating the '520 patent and other WesternGeco patents, and have collaborated together, and invoked a common interest privilege, does not persuade us that ION has the ability to control, direct, or fund, the District Court or this IPR proceeding.

A common criteria in determining privity is that of control. For our purposes here, a relevant question is: does the evidence presented by Patent Owner display sufficient exercise of control by ION over PGS? Case law reveals that there must be more than just general communication and a shared interest. *Taylor v. Sturgell*, 553 U.S. 880, 906 (2008) ("A mere whiff of 'tactical maneuvering' will not suffice; instead, principles of agency law are suggestive. They indicate that preclusion is appropriate only if the putative agent's conduct of the suit is subject to the control of the party who is bound by the prior adjudication.")

With respect to the ability to control, the Board has issued decisions determining based on evidence of control that a non-party entity is a real party-in-interest. *See Zoll Lifecor Corp. v. Philips Elecs. North America Corp.*, Case IPR2013-00609 (PTAB Mar. 20, 2014) (Paper 15) (the "Zoll Decision"). In the *Zoll* Decision, the Board was persuaded that an unnamed party to the IPR, Zoll Medical, exercised consistent control over Zoll Lifecore for over six years, including control of the *inter partes* review. *Id.* at 11. Specific evidence of control included Zoll Lifecor's acknowledgment that Zoll Medical controlled 100% of Zoll Lifecor and approved Zoll Lifecor's corporate budget and plans. *Id.* Other evidence of control

included the fact that common counsel for Zoll Medical and Zoll Lifecor would not state affirmatively that counsel did not provide input into preparation of the IPRs. *Id.* at 11–12. Additional evidence showed that only Zoll Medical's management team attended court-ordered mediation in the underlying district court litigation filed against Zoll Lifecor. *Id.* at 12. These factors are also relevant for the determination of privity. *See ARRIS Group, Inc. v. C-Cation Techs., LLC*, Case IPR2014-00746, slip op. at 8–10 (PTAB Nov. 24, 2014) (Institution Decision, Paper 22) ("*ARRIS*"). A "common consideration" in determining whether a non-party is in privity with a litigant is "whether the non-party exercised or could have exercised control over a party's participation in a proceeding." *Id.* (citing *Taylor*, 553 U.S. at 895).

We have been apprised of no such evidence of control, or ability to control by ION in this proceeding, the District Court proceeding, or any other proceeding. ION and Petitioner are not related corporate entities, but related as purchaser (Petitioner) and manufacturer (ION) of ION's DigiFIN product. *See generally* Exs. 2002, 2006. By way of background, based on a request in October 2000 from PGS, ION provided to PGS a written proposal to develop a "Next Generation Streamer Positioning System." Ex. 2002. In May 2006, ION and Petitioner executed a "Launch Partner Agreement," that specified a 60 day "beta test" procedure where ION would supply the DigiFin product and Petitioner would supply the ocean going survey vessel to conduct the beta test. Ex. 2006. Patent Owner's mere reference to these documents is not, without more, persuasive evidence of control of the *ION* lawsuit or the PGS IPR. *See* PO Resp. 50–51. For example, the "Launch Partner Agreement" is simply evidence of a purchaser-manufacture

relationship with Petitioner (PGS) and ION collaborating on an initial field "beta test" of the DigiFin product. *See* Ex. 2006.

Patent Owner next points to deposition testimony from the *ION* lawsuit of ION employee John Thompson that it contends establishes privity. PO Resp. 51. The confidential deposition evidence of John Thompson (Ex. 2059), and a related email and press release (Ex. 2060; Ex. 2061) relied upon by Patent Owner establish that ION informed Petitioner in June 2009, and also apparently the entire U.S. industry via the press release, about the existence of the *ION* lawsuit. *See* Ex. 2059, 38:20–39:8; Ex. 2060; Ex. 2061. Thompson's email to Petitioner contained a copy of the press release and indicates that ION issued the press release in the U.S. June 22, 2009. Ex. 2060; Ex. 2061. Referring to the press release Mr. Thompson stated: "This sums up our current position with regard to the filing by WesternGeco and our subsequent lawsuit filed against them. We will obviously keep PGS advised of any further developments." Ex. 2060. Patent Owner cites Mr. Thompson's statement in their Response, but provides no analysis or explanation as to why such a statement shows privity. It is entirely reasonable, and understandable, that the manufacturer of DigiFin, inform its customers of a lawsuit impugning the DigiFin product. We are not persuaded, therefore, that this email is evidence of control or privity between PGS and ION or anything other than a normal purchaser-manufacturer relationship.

Patent Owner further alleges that ION is obligated to indemnify Petitioner, and thus is a privy with Petitioner because of an indemnification provision in the 2008 Master Purchase Agreement (Ex. 2057) between PGS (Petitioner) and [redacted] an ION subsidiary.

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PO Resp. 53. Patent Owner argues that the indemnification provision "unequivocally obligates ION [redacted] to indemnify PGSAS from any claim by third parties regarding breach of patent rights and grants unilateral control to ION [redacted]" *Id*. In its Response, Patent Owner provided the following annotated excerpt from the indemnification provision:

[redacted]

*Id*. (citing Ex. 2057, 14 (emphasis added)). We reproduce, below the entire provision, including the bulleted options left out by Patent Owner, as we believe they aid in understanding the provision as a whole.

[redacted]

Ex. 2057, 14.

Patent Owner contends that Petitioner invoked this indemnification provision in its letter of November 13, 2012 to ION citing the above indemnification provision and stating [redacted]

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[redacted] Ex. 2027. From this letter, and the Agreement, Patent Owner summarily concludes that ION's obligations are "defending against an infringement lawsuit, proving the invalidity of a patent in a review proceeding, and obtaining a license." PO Resp. 54.

We do not agree that the bulleted provisions above extend ION's rights or obligations as far as Patent Owner asserts. Nowhere in the asserted provision of the Agreement does it state that [redacted] (ION) has the right, or obligation, to *defend a lawsuit*, control litigation, or undertake any type of invalidity proceedings such as the District Court proceeding or the present IPR. We agree with Patent Owner that a reasonable interpretation of the indemnification provision, above, could include [redacted]. *Id.* at 54. There is, however, no express language or evidence that Patent Owner points to that persuades us to interpret the language of the indemnification provision as requiring ION to "defend[] against an infringement lawsuit," and thus extend the provision to include a specific obligation to defend, or pay for, a lawsuit filed against Petitioner or to undertake an IPR proceeding on Petitioner's behalf. Certainly, ION has every right to defend itself against an infringement lawsuit, or file its own IPR, however no reasonable reading of the language pointed to by Patent Owner obligates ION to do the same for Petitioner.

Indeed, there is insufficient evidence in the record that Petitioner ever contemplated or requested ION to defend a lawsuit or file an invalidity proceeding on its behalf. Petitioner's letter of November 13, 2012 to ION, does not actually "invoke" any specific remedy or refer to any necessity for ION to step in and defend a lawsuit; Petitioner's letter requests generally

"[redacted]" *See* Ex. 2027. In fact, a previous email sent July 6, 2012 [redacted], is consistent with the indemnification provision in the Agreement and also does not specify or imply any obligation on the part of ION to defend PGS from a lawsuit, reimburse or pay for a lawsuit, or file an invalidity proceeding. *See* Ex. 2022. [redacted]

*Id*.

This evidence does not persuade us that ION has an obligation to step in and defend Petitioner against a lawsuit or to otherwise pay for the defense of a lawsuit and advance Petitioner as ION's proxy. "The mere existence of an indemnification agreement does not establish that the indemnitor has the opportunity to control an inter partes review." *Nissan N. Am., Inc. v. Diamond Coating Techs., LLC*, Case IPR2014-01546, slip. op. at 7 (PTAB Apr. 21, 2015) (Paper 10) (determining that the existence of an indemnification agreement was not sufficient to establish that the unnamed

parties were real parties-in-interest to the *inter partes* review proceeding); *see also Arris Group, Inc. v. C-Cation Tech., LLC*, IPR2015-00635, slip op. at 9–12 (PTAB July 31, 2015) (Paper 19) (determining fact that "indemnification claims were made according to the provisions of the [indemnification] Agreements" was not sufficient to show control over the district court proceedings such that a party was in privity with the Petitioner).

The evidence shows that Petitioner and ION had a contractual and fairly standard customer-manufacturer relationship with respect to DigiFin. *See* Exs. 2002, 2022, 2027, 2057, 2060, 2061. Indeed, the [redacted] and communications between [redacted] reveals a cordial, but arms-length negotiation over potential remedies, none of which were articulated by either ION or PGS as requiring ION to defend PGS in a lawsuit or file an IPR. The relationship evidence relied upon by Patent Owner shows that ION and Petitioner at times shared publically available information and trial witness times regarding the *ION* lawsuit, and had discussed the availability of witnesses for deposition. Exs. 2015, 2016. But this is not shared legal advice, nor does it truly rise to the level of strategic collaboration in this case. We are not persuaded that this is sufficient evidence of control or ability to control to establish privity.

Patent Owner argues, based on this evidence that "the parties strong relationship throughout the litigation makes them privies." PO Resp. 53. Patent Owner has not, however, explained sufficiently why, or how, the evidence of ION and PGS's relationship before, or during the *ION* lawsuit, is indicative of control. The weight of this evidence bears more heavily towards a finding that the relationship was contractual, a fairly conventional

purchaser-manufacturer relationship, with discussions and communications undertaken generally at arms-length. Further, although PGS's and ION's dealings during the *ION* lawsuit may be indicative of cooperation to an extent, neither the evidence of cooperation or collaboration in a joint defense is sufficient on this record to render ION and Petitioner privies.

Accordingly, Patent Owner has not provided a sufficient factual basis upon which to conclude that Petitioner and ION are privies.

*2. Whether ION is an Unnamed RPI Under 35 U.S.C. § 315(b)*

The statute governing *inter partes* review proceedings sets forth certain requirements for a petition for *inter partes* review, including that "the petition identif[y] *all* real parties in interest." 35 U.S.C. § 312(a) (emphasis added); *see also* 37 C.F.R. § 42.8(b)(1) (requirement to identify real parties in interest in mandatory notices). The Office Patent Trial Practice Guide explains that "[w]hether a party who is not a named participant in a given proceeding nonetheless constitutes a 'real party-in-interest' . . . to that proceeding is a highly fact-dependent question." 77 Fed. Reg. at 48,759. The Practice Guide further states that:

> However, the spirit of that formulation as to IPR and PGR proceedings means that, at a general level, the "real party-in-interest" is the party that desires review of the patent. Thus, the "real party-in-interest" may be the petitioner itself, and/or it may be the party or parties at whose behest the petition has been filed.

*Id.* (emphasis added). The determination of whether a party is an RPI is a "highly fact-dependent question" (*id.*), in which the focus is on the party's relationship to the *inter partes* review pending before the Board, and the

degree of control the party can exert over the proceeding. *See Aruze Gaming Macau, Ltd. v. MGT Gaming, Inc.*, Case IPR2014-01288, slip op. at 11 (PTAB Feb. 20, 2015) (Paper 13). "[I]f a nonparty can influence a petitioner's actions in a proceeding before the Board, to the degree that would be expected from a formal copetitioner, that nonparty should be considered an RPI to the proceeding." *Id.* at 12.

Patent Owner asserts in its Response that ION is a real party-in-interest under the factors set forth in our Practice Guidelines because (a) Petitioner invoked ION's indemnity obligations by notifying ION that Petitioner expected ION to fulfill its obligations and pay for the lawsuit and this IPR proceeding; (b) ION was obligated to pay for this IPR and was instrumental in developing invalidity theories, thus, giving ION an "interest, opportunity to control, and active control over the Petition[;]" and (c) Petitioner is ION's proxy due to ION's obligation under the indemnification agreement. PO Resp. 55–56.

Although it does not cite to it in the relevant section IV. D. of its Patent Owner Response, Patent Owner's main contention, that ION has indemnified Petitioner, and thus controls this IPR, focuses on an indemnification provision in the 2008 Master Purchase Agreement ("Agreement" Ex. 2057) between PGSAS and [redacted], an ION subsidiary. *Id.* The Agreement is considered protective order material in this proceeding. *See* Ex. 2057, 14.

Our review of the Agreement, as discussed above with respect to the issue of privity, reveals no express language, context, or evidence that Patent Owner points to, that persuades us to interpret the language of the indemnification provision as requiring ION to defend a lawsuit, and, thus,

extend the provision to include a specific obligation to defend, or pay for, a lawsuit filed against Petitioner or to undertake an IPR proceeding. Based on the evidence provided by Patent Owner, and for the same reasons set forth *supra*, ION does not have an obligation to step in and defend Petitioner against a lawsuit or to otherwise pay for the defense of a lawsuit and advance Petitioner as ION's proxy. "The mere existence of an indemnification agreement does not establish that the indemnitor has the opportunity to control an inter partes review." *Nissan N. Am., Inc. v. Diamond Coating Techs., LLC*, Case IPR2014-01546, slip. op. at 7 (PTAB Apr. 21, 2015) (Paper 10) (determining that the existence of an indemnification agreement was not sufficient to establish that the unnamed parties were real parties-in-interest to the *inter partes* review proceeding).

*3. Additional Discovery*

Patent Owner next argues that the Board prejudicially denied Patent Owner additional discovery on the RPI and privity issue and that "[d]ue process, however, requires that Patent Owner be given the opportunity to seek this evidence, which is in the sole possession of PGS and otherwise unavailable to Patent Owner." PO Resp. 57 (*citing* Paper 32 ("Rehearing Request" or "Reh'ing Req.")). In its Rehearing Request Patent Owner sought authorization to file a motion for additional discovery based on an Order from the first PGS IPR, (IPR2014-00689 (Paper 67)) denying additional discovery.[9] We did not grant authorization for additional discovery following a telephone discovery conference with the parties in the

[9] We note that Paper 67 replaced Paper 59 which was expunged from the record in this proceeding.

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IPR2014-00689 proceeding. Reh'ing Req. 1–2 *see* IPR2014-00689 (Paper 67).

The fact that Patent Owner disagrees with our determination does not mean that our determination was prejudicial to Patent Owner. Neither party in an AIA proceeding is entitled to unfettered discovery. Our rules proscribe *limited discovery*, and allow the Board to weigh evidence, discern the basis upon which a party moves for additional discovery and determine whether or not "additional discovery is in the interests of justice." 37 C.F.R. § 42.51(b)(2)(i). Patent Owner argued that it is entitled to additional discovery because there is purportedly a "hidden relationship" between PGS and ION. Reh'ing Req. 1. As evidence of this "hidden relationship" Patent Owner asserts that Petitioner produced only one indemnification agreement, that is, the Master Services Agreement Ex. 2057 discussed *supra*. *Id*. at 2, 6–7. Patent Owner contends that other agreements exist that evidence a privity relationship because "PGS has admitted to the existence of ***multiple*** indemnification agreements and requests for indemnification under those agreements." *Id*. at 6–7 (citing Ex. 2018, 14; Ex. 3002, 21:21−22:17, 25:16−26:21).

The first and oft-disputed factor in determining whether additional discovery is necessary in the interests of justice is whether there exists more than a "mere possibility" or "mere allegation that something useful [to the proceeding] will be found." *Garmin Int'l, Inc. v. Cuozzo Speed Techs. LLC*, Case IPR2012-00001, slip op. at 2–3 (PTAB Feb. 14, 2013) (Paper 20), "Order—Authorizing Motion for Additional Discovery" (listing factors to determine whether a discovery request is necessary in the interests of justice) ("the *Garmin* factors"). Under this first factor, a party should already be in

possession of evidence tending to show beyond speculation that in fact something useful will be uncovered. *Id*. The discovery-seeking party only needs to set forth a threshold amount of evidence tending to show that the discovery it seeks factually supports its contention. *See Garmin*, Case IPR2012-00001, slip op. at 8–9 (PTAB Mar. 5, 2013) (Paper 26), "Decision—On Motion for Additional Discovery" (finding that, with respect to *Cuozzo's* contention of commercial success, *Cuozzo* failed to present a threshold amount of evidence tending to show that the requested discovery of sales and pricing information involved units with a nexus to the claimed features).

Having again considered Patent Owner's request for additional discovery we are not persuaded that additional discovery was prejudicially denied. First, the Master Services Agreement itself does not refer to any other documents, agreements, or otherwise disclose the existence of additional related indemnification provisions or such similar documents. *See generally* Ex. 2057. Secondly, although other agreements between ION and PGS and affiliates may exist, we have been apprised of no evidence that any of these other purported "multiple agreements" to which Patent Owner refers, have any relation to the underlying *ION* litigation, DigiFin product, or contain any specific language or provisions relating to an obligation on the part of ION to defend or indemnify PGS in a lawsuit or invalidity proceeding. *See* Ex. 2018. Patent Owner's Rehearing Request, as well as its Patent Owner's Response, is devoid of any evidence as to what is contained in, or required by such additional agreements, or that such purported additional agreements bear on PGS and ION's relationship in this IPR proceeding.

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Patent Owner's lack of evidence pertaining to the substance or nature of any such "multiple agreements" was clear during the telephone discovery conference with the Board. During the discovery conference Patent Owner's counsel stated:

> 4 And we are seeking additional discovery
> 5 on those agreements because those agreements can
> 6 be case dispositive in showing privity between
> 7 Ion and PGS.
>
> . . .
>
> 14 We have evidence that there are
> 15 agreements out there, Your Honor. We want those
> 16 agreements and the petitioner is not willing to
> 17 provide those to us.

Ex. 3002, 22:4–17. Patent Owner's counsel continued emphasizing the existence of such other agreements, explaining that:

> 14 An[] indemnification agreement can serve to
> 15 provide enough privity, or in the context of a
> 16 CBM for an indemnification agreement for one
> 17 company to have standing for CBM[,] we want to be
> 18 able to make the privity argument here through
> 19 these agreements, that privity alone can be shown
> 20 through these agreements if we can get our hands
> 21 on them.

*Id.* at 26:14–21. We agree to an extent with counsel's point here, e.g. that indemnification can, in certain cases, show privity. Patent Owner's

argument, that an indemnification provision may support a finding of privity, is, however, simply attorney argument. The only evidence we can discern from the above statements and from the Rehearing Request is that Petitioner admits to other agreements with ION that may have indemnification provisions unrelated to these IPR proceedings. *See* Ex. 2018, 14. Our review of Petitioner's Responses to Patent Owner's Interrogatories in Exhibit 2018, indicates that Petitioner's counsel, David Berl, unambiguously stated that Petitioner had made no claims or demands to ION for indemnity with respect to the '520 patent.

> The PGS IPR Proceedings were filed by PGS. Although a PGS affiliate has informed ION that Patent Owner has asserted a claim relating to the use of devices provided by ION, neither PGS nor its affiliates have made demands to ION concerning the Challenged Patents under any such warranty or indemnity provision.

Ex. 2018, 14.

In *Taylor*, the U.S. Supreme Court articulated the difficult burden of proof that Patent Owner faces here.

> We acknowledge that direct evidence justifying nonparty preclusion is often in the hands of plaintiffs rather than defendants. *See, e.g., Montana*, 440 U.S., at 155, 99 S.Ct. 970 (listing evidence of control over a prior suit). But "[v]ery often one must plead and prove matters as to which his adversary has superior access to the proof." 2 K. Broun, McCormick on Evidence § 337, p. 475 (6th ed.2006). In these situations, targeted interrogatories or deposition questions can reduce the information disparity. We see no greater cause here than in other matters of affirmative defense to disturb the traditional allocation of the proof burden.

*Taylor*, 553 U.S. at 907.

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We are not now, as we were not during the discovery conference or in considering the Rehearing Request, persuaded that the mere existence of additional agreements between ION and Petitioner is any evidence that something "useful" with respect to privity will be discovered. Something "useful" is something favorable in substantive value to a contention of the party moving for discovery. *Garmin* (Paper 26) at 7–8. We have not required that a party seeking additional discovery prove its contention as a prerequisite for obtaining the additional discovery. On the other hand, the mere existence of another agreement between ION and Petitioner does not without more, provide any evidence beyond speculation as to what is substantively contained in that agreement or that privity will be found from an indemnification provision in such an agreement.

*4. Multi Klient*

Patent Owner argues that a new, and allegedly wholly owned subsidiary of Petitioner, Multi Klient Invest AS ("Multi Klient"), has been revealed in the district court litigation as an "interested party concerning the subject matter of the '520 patent." PO Resp. 58 (*citing* Exs. 2014; 2015; 2016; 2017; 2062; 2063; 2064; 2065). The fact that Multi Klient may be related to Petitioner and is indicated as having a financial interest in the outcome of litigation, however, does not by itself indicate that Multi Klient is a real party in interest in this IPR, or has any ability to control the present IPR proceeding. *See* Ex. 2066 (referring to Paragraph 2 of Order for Pretrial Conference as determinative of "financially interested" defendants.) Patent Owner cites generally to numerous exhibits without any factual analysis or explanation of the evidentiary relevance of these exhibits with respect to Multi Klient, Petitioner, and the real party in interest issue. PO Resp. 58.

Accordingly, we are not persuaded by what is essentially bare attorney argument that Multi Klient is an RPI to this proceeding and deny Patent Owner's request to terminate this IPR.

## IV. MOTION TO EXCLUDE EVIDENCE

Petitioner filed a Motion to Exclude Evidence seeking to exclude portions of the testimony of Robin Walker (Ex. 2099) and numerous other exhibits submitted by Patent Owner. Paper 53. The party moving to exclude evidence bears the burden of proving that it is entitled to the relief requested—namely, that the material sought to be excluded is inadmissible under the Federal Rules of Evidence. *See* 37 C.F.R. §§ 42.20(c), 42.62(a). Even without considering this evidence, we have determined that Petitioner has established, based on a preponderance of the evidence, the unpatentability of claim 4 of the '520 patent. Furthermore, from Petitioner's listed Exhibits on page 1 of its Motion to Exclude, our Decision includes only material references to Exhibits 2059–61, 2083, 2099, and 2125. The remainder of the listed exhibits were not substantively considered for our Decision.

Petitioner challenges Exhibits 2059–2061 as hearsay. Exhibit 2059 is a written transcript of Patent Owner's videotaped deposition of ION employee John Thompson conducted during the *ION* lawsuit. Mr. Thompson's deposition was submitted by Patent Owner in this proceeding as confidential. Mr. Thompson's deposition is relied upon by Patent Owner essentially as a declaration, and like Patent Owner's other declarants, Petitioner had opportunity to cross-examine Mr. Thompson in this IPR proceeding. Additionally, Mr. Thompson's deposition testimony relates, at least in relevant part, to his email and attached press release also submitted

by Patent Owner as Exhibits 2060 and 2061, and to which we refer to in this Decision. Mr. Thompson's deposition testimony relating to his own email is his own recollections, not those of another, and because Petitioner had the opportunity to cross-examine Mr. Thompson in this proceeding, his statements are not inadmissible.

The same analysis applies to the trial testimony of Dr. Bittleston and Kenneth Williamson, to which we refer above from Exhibits 2083 and 2125. Dr. Bittleston's testimony from the *ION* lawsuit is his own understanding of the '520 patent, which bears his name as an inventor. Mr. Williamson's testimony relates to his recollections of customer and product feedback with respect to lateral steering. We find this prior trial testimony as similar to a declaration in this proceeding for which Petitioner had the opportunity to conduct cross-examinations and is not inadmissible.

Exhibit numbers for Exhibits 2101, 2108–2116, 2120, 2129, and 2130, are listed due to citation by Patent Owner, and for Exhibit 2099, Petitioner's hearsay and foundation arguments do not pertain to the particular paragraphs of Mr. Walker's testimony that we substantively considered with respect to nexus. Mr. Walker's testimony is not irrelevant because his arguments purporting to support nexus pertain generally to the claims at issue here.

For these reasons, we deny Petitioner's Motion to Exclude.

## V. MOTIONS TO SEAL

The Parties have filed multiple motions to seal in this proceeding pursuant to the Board's Default Protective Order entered in this proceeding. Paper 27. These motions indicate various portions of witness testimony, documents, and certain communications that are considered confidential or

highly confidential and that may be subject to a protective order in the underlying district court proceedings as well. *See* Exs. 4, 16, 41, 50, 55, and 64.

We enter this entire Final Decision under seal, designated as FOR BOARD AND PARTIES ONLY. As set forth in our Order, below, the Parties shall meet and confer, and provide the Board with a proposed public version of this Final Decision within 15 days of the entry of this Final Decision, indicating by underlining, what portions of the Final Decision they propose to redact.

## VI. CONCLUSION

We conclude that Petitioner has demonstrated by a preponderance of the evidence that (1) claims 3, 5, 20, and, 22 are unpatentable as obvious over Workman; (2) claims 13, 14, 30, and 31 are unpatentable as anticipated by Workman; (3) claims 13, 14, 30, and 31 are unpatentable as obvious over Workman; and (4) claims 15–17 and 32–34 are unpatentable as obvious over Workman and Dolengowski;.

This is a Final Written Decision of the Board under 35 U.S.C. § 318(a). Parties to the proceeding seeking judicial review of this decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

## VII. ORDER

For the reasons given, it is

ORDERED that claims 3, 5, 13–17, 20, 22, and 30–34 of U.S. Patent No. 7,293,520 are determined by a preponderance of the evidence to be unpatentable;

FURTHER ORDERED that Patent Owner's request to terminate this IPR based on Multi Klient AS is DENIED;

**PUBLIC - REDACTED**

FURTHER ORDERED that Petitioner's Motion to Exclude is DENIED;

FURTHER ORDERED that Petitioner and Patent Owner shall meet and confer, and provide the Board with a proposed public version of this Final Decision within 15 days of the entry of this Final Decision. The proposed public version will indicate by underlining, what portions of the Final Decision the parties propose to redact; and

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

**PUBLIC - REDACTED**

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